

Outputs and Interactions – Process Measurements Division

1. Publications

- Bals, K.M., Ross, D.J., and Tarlov, M.J., ***“Temperature Gradient Focusing of Matched and Partially Mismatched DNA/PNA Hybridizations,”*** Proc. 7th Intl. Conf. on Miniaturized Chemical and Biochemical Analysis Systems 2003 (in press).
- Bals, K.M., Ross, D.J., Begley, H., Olsen, K.G., and Tarlov, M.J., ***“Controlled Mixing: An In-Situ Hybridization Assay of Peptide Nucleic Acids with DNA by Temperature Gradient Focusing,”*** J. of American Chemical Society (in press).
- Berg, R.F., and Cignolo, G., ***“NIST-IMGC Comparison of Gas Flows Below One Litre per Minute,”*** Metrologia 40, p. 154-158 (2003).
- Boger, Z., Cavicchi, R.E., and Semancik, S., ***“Analysis of Conductometric Microsensor Responses in a 36-Sensor Array by Artificial Neural Networks Modeling,”*** Proc. 9th Intl. Symp. on Olfaction & Electronic Nose 2002, p. 135-140 (2002).
- Boger, Z., Meier, D.C., Cavicchi, R.E., and Semancik, S., ***“Artificial Neural Networks Methods Applied to Conductometric Microhotplate Data for the Identification of the Type and Relative Concentration of Chemical Warfare Agents,”*** Proc. Intl. Joint Conf. on Neural Networks 2003, p. 1065-1070 (2003).
- Boger, Z., Meier, D.C., Cavicchi, R.E. and Semancik, S., ***“Rapid Identification of CW Agents by Artificial Neural Networks Pruning of Temperature Programmed Microsensor Databases,”*** Sensor Letters (in press).
- Cavicchi, R.E., Poirier, G.E., Tea, N.H., Afridi, M., Berning, D.W., Hefner, A.R., Suehle, J.S., Gaitan, M., Semancik, S., and Montgomery, C.B., ***“Micro-Differential Scanning Calorimeter for Combustible Gas Sensing,”*** Sensors and Actuators B 9, p.155-164. (2003).
- Cavicchi, R.E., Semancik, S., DiMeo, F., and Taylor, C.J., ***“Use of Microhotplates in the Controlled Growth and Characterization of Metal Oxides for Chemical Sensing,”*** J. of Electroceramics (in press).
- Choquette, S. Etz, E., Hurst, W., and Blackburn, D., ***“Relative Intensity Correction Standards for Raman Spectroscopy for Excitation with Several Common Laser Wavelengths,”*** American Pharmaceutical Rev. 6, (2), p. 74-79 (2003).
- DesJardin, P.E., Presser, C., Disimile, P.J., and Tucker, J.R., ***“A Phenomenological Droplet Impact Model for Lagrangian Spray Transport,”*** Proc AIAA 2003-1322, Am. Inst. Aero. Astro., (2003).
- Donhauser, Z.J., Moore, A.M., Stapleton, J.J., van Zee, R.D., Price, D.W., Yao, Y., Tour, J.M., Allara, D.L., and Weiss, P.S., ***“Negative Differential Resistance is not an Intrinsic Property of Functionalized Phenylene-Ethynylene Oligomers,”*** Science (in press).

- Ehrlich, C.D., and Schmidt, J.W., ***“IUPAC Experimental Thermodynamics Volume VI: Measurement of the Thermodynamic Properties of Single Phases: Chap. 3 Pressure; b) Piston Gauges,”*** Experimental Thermodynamics Intl. Union of Pure and Applied Chemistry (in press).
- Evju, J.K., Howell, P.B., Locascio, L.E., Tarlov, M.J., and Hickman, J.J., ***“Atmospheric Pressure Microplasmas for Modifying Sealed Microfluidic Devices,”*** Applied Physics Letters (in press).
- Fellmuth, B., Berger, D., Wolber, L., deGroot, M., Head, D., Hermier, Y., Mao, Y. Z., Nakano, T., Pavese, F., Shkraba, V., Steele, A.G., Steur, P.P.M., Szymrka-Grzebyk, A., Tew, W.L., Wang, L., and White, D.R., ***“An International Star Intercomparison of Low-Temperature Fixed Points Using Sealed Triple-Point Cells,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7 (in press).
- Gillis, K.A., Mehl, J.B., and Moldover, M.R., ***“Theory of the Greenspan Viscometer,”*** J. of the Acoustical Society of America 114, p. 166-173 (2003).
- Gowda, V.S., Yeh, T.T., Espina, P.I., and Yende, N., ***“The New NIST Water Flow Calibration Facility,”*** Proc. FLOMEKO 2003, on CD (2003).
- Huang, P.H., ***“The Moisture Content of the Air in Equilibrium with Certain Desiccants,”*** Proc. 4th Intl. Symposium on Humidity and Moisture, Vol. 1, p. 76-80 (2002).
- Huang, P.H., ***“Repeatability and Reproducibility Uncertainty in Measurement of Trace Moisture Generated using Permeation-Tube,”*** Proc. 4th Intl. Symposium on Humidity and Moisture, Vol. 1, p. 128-134 (2002).
- Huang, P.H. and Kacker, R., ***“Repeatability and Reproducibility Standard Deviations in the Measurement of Trace Moisture Generated Using Permeation Tubes,”*** J. of Research of the National Institute of Standards and Technology 18, p. 235-240 (2003).
- Hurly, J.J., ***“The Thermophysical Properties of Process Gases via Acoustics,”*** Semiconductor Intl. (in press).
- Hurly, J.J., ***“Thermodynamic Properties of Gaseous Nitrous Oxide and Nitric Oxide from Speed-of-Sound Measurements,”*** Intl. J. of Thermophysics (in press).
- Hurst, W.S., and Maslar, J.E., ***“In Situ Raman Spectroscopic Investigation of Corrosion of Selected Metals and Alloys Under Hydrothermal Conditions,”*** Proc. Intl. Conf. on Solvothermal Reactions, p. 25-29 (2003).
- Jain, K., Bowers, W.J., and Schmidt, J.W., ***“A Primary Dead-Weight Tester for Pressures (0.05-1.0) Mpa in Gage Mode,”*** Proc. IMEKO (in press).
- Jain, K., Cen, Y., Bowers, W.J., and Schmidt, J.W., ***“A Double-Primary Dead-Weight Tester for Pressures (35-175) kPa in Gage Mode,”*** J. of Res. of the National Institute of Standards and Technology 108, p. 135-145 (2003).

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- Johnson, A., Merkle, C.L., Moldover, M.R., and Wright, J.D., "**Relaxation Effects in Small Critical Nozzles,**" *J. of Fluids Engineering* (in press).
- Kimura-Suda, H., Petrovykh, D.Y., Tarlov, M.J., and Whitman, L.J., "**Base-Dependent Competitive Adsorption of Single-Stranded DNA on Gold,**" *Nature* (in press).
- Kreider, K.G., Kimes, W.A., Meyer, C.W., Ripple, D.C., Tsai, B.K., Chen, D.H., and DeWitt, D.P., "**Calibration of Radiation Thermometers in Rapid Thermal Processing Tools using Si Wafers with Thin Film Thermocouples,**" *Temperature: Its Measurement and Control in Science and Technology*, Vol. 7, (in press).
- Kreider, K.G., Chen, D.H., DeWitt, D.P., Kimes, W.A., and Tsai, B.K., "**Effects of Lightpipe Proximity on Si Wafer Temperature in Rapid Thermal Processing Tools,**" *Proc. AIP Conf. on Characterization and Metrology for ULSI Technology* (in press).
- Kreider, K.G., Chen, D.H., DeWitt, D.P., Kimes, W.A., and Tsai, B.K., "**Lightpipe Proximity Effects on Si Wafer Temperature in Rapid Thermal Processing Tools,**" *Proc. 11th IEEE International Conf. on Thermal Processing of Semiconductors - RTP 2003* (in press).
- Kremer, D.M., Davis, R.W., Moore, E.F., Maslar, J.E., Burgess, D.R., and Ehrman, S.H., "**An Investigation of Particle Dynamics in a Rotating Disk Chemical Vapor Deposition Reactor,**" *J. of the Electrochemical Society* 150, p. G127-G139 (2003).
- Kremer, D.M., Davis, R.W., Moore, E.F., and Ehrman, S.H., "**A Numerical Investigation of the Effects of Gas-Phase Particle Formation on Silicon Film Deposition from Silane,**" *J. of Crystal Growth* 247, p. 333-356 (2003).
- Kremer, D.M., Davis, R.W., Moore, E.F., and Ehrman, S.H., "**A Numerical Investigation of Aerosol Dynamics in a Wall-less Reactor,**" *Chemical Engineering Science* (in press).
- Lehman, S.Y., Bertness, K.A., and Hodges, J.T., "**Detection of Trace Water in Phosphine with Cavity Ring-Down Spectroscopy,**" *J. of Crystal Growth* 250, p. 262-268 (2003).
- Maslar, J.E., and Hurst, W.S., "**In Situ Optical Diagnostics of Silicon Chemical Vapor Deposition Gas-Phase Processes,**" *Proc. AIP Conf. on Characterization and Metrology for ULSI Technology*, p. 748-752 (2003).
- Meyer, C.W., and Tew, W.L., "**The NIST Low Temperature ITS-90 Realization and Calibration Facilities,**" *Temperature: Its Measurement and Control in Science and Technology*, Vol. 7, (in press).
- Moldover, M.R., and Ripple, D.C., "**Comment on 'General Principles for the Definition of the Base Units in the SI',**" *Metrologia* 40, p. L9-L10 (2003).

- Moldover, M.R., Marsh, K.N., Barthel, J.M., and Buchner, R., "**Chapter 9: Relative Permittivity and Refractive Index,**" in "Measurement of the Thermodynamic Properties of Single Phases," eds. A.R.H. Goodwin, K.N. Marsh, and W.A. Wakeham, p. 433-473, IUPAC (2003).
- Nam, S.W., Benz, S.P., Martinis, J.M., Dresselhaus, P., Tew, W.L., and White, D.R., "**A Ratiometric Method for Johnson Noise Thermometry Using a Quantized Voltage Noise Source,**" Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Nam, S.W., Benz, S., Dresselhaus, P., Tew, W.L., White, D.R., and Martinis, J.M., "**Johnson Noise Thermometry Measurements Using a Quantized Voltage Noise Source for Calibration,**" IEEE Transactions on Instrumentation and Measurement, IM-52, p. 550-554 (2003).
- Panchapakesan, B., DeVoe, D.L., Cavicchi, R.E. and Semancik, S., "**Nanoscale Manipulation and Control of Tin Oxide Nanostructures on Large Area Arrays of Microhotplates,**" Proc. 12th Intl. Conf. on Solid State Sensors, Actuators, and Microsystems, Vol. 1, (1B4.1), p. 119-122 (2003).
- Petrovykh, D.Y., Kimura-Suda, H., Tarlov, M.J., and Whitman, L.J., "**Quantitative Characterization of DNA Films by XPS,**" Surface and Interface Analysis (in press).
- Pipino, A.C., Meuse, C.W., Hoefnagels, J.P.M., Silin, V., and Woodward, J.T., "**Surface Applications of Cavity Ring-Down Spectroscopy,**" NISTIR 6957 (2003).
- Pipino, A.C., Woodward, J.T., Meuse, C.W., and Sillin, V., "**Surface-Plasmon-Resonance-Enhanced Cavity Ring-Down Detection,**" J. of Chem. Physics (in press).
- Presser, C., Papadopoulos, G., and Widmann, J.F., "**Droplet-Laden Homogeneous Turbulent Flow Past Unheated and Heated Cylinders,**" Proc. ASME/JSME Joint Fluids Engineering Conference, (FEDSM '03), FEDSM 2003-45240, on CD, Am. Soc. Mech. Engrs. (2003).
- Presser, C., Widmann, J.F., and Papadopoulos, G., "**PIV Measurements of Droplet Transport Homogeneous Turbulent Flow Over a Cylinder,**" Proc AIAA 2003-0846, Am. Inst. Aero. Astro., (2003).
- Presser, C., Avedisian, C.T., and Johnson, B.S., "**Phase Doppler Measurements of Liquid Agent Transport over a Heated Cylinder,**" Proc. 13th Halon Options Technical Working Conf. (HOTWC-2003), NIST Special Publication 984-1 (R.G. Gann, Ed.), on CD (2003).
- Presser, C., Papadopoulos, G., and Widmann, J.F., "**PIV Measurements in a Droplet-Laden Homogeneous Turbulent Flow over a Cylinder,**" Proc. 16th Annual Conf. on Liquid Atomization and Spray Systems (ILASS Americas '03), on CD (2003).
- Pugmire, D.L., Tarlov, M.J., and van Zee, R.D., "**The Structure of Benzenedimethanethiol Self-Assembled Monolayers on Gold Grown by Solution and Vapor Techniques,**" Langmuir 19, (9), p. 3720-3726 (2003).

- Ripple, D.C., Defibaugh, D.R., Moldover, M.R., and Strouse, G.F., "***Techniques for Primary Acoustic Thermometry to 800 K***," Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Ripple, D.C., Garrity, K.M., and Meyer, C.W., "***A Four-Zone Furnace for Realization of Silver and Gold Freezing Points***," Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Ross, D., and Locascio, L.E., "***Temperature Gradient Focusing***," Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Ross, D., and Locascio, L.E., "***The Effect of Caged Fluorescent Dye on the Electroosmotic Mobility in Microchannels***," Analytical Chemistry (in press).
- Ross, D., and Locascio, L.E., "***Fluorescence Thermometry in Microfluidics***," Temperature: Its Measurement and Control in Science and Technology, Vol. 7, (in press).
- Ross, D., Ivory, C.F., Locascio, L.E. and Van Cott, K.E., "***Peak Compression and Resolution for Electrophoretic Separation in Diverging Microchannels***," Analytical Chemistry (in press).
- Ross, D., Balss, K.M., Howell, P.B., and Vreeland, W.N., "***MAGF: A New Method for High-Performance Focusing of Uncharged and Hydrophobic Analytes***," Proc. 7th Intl. Conf. on Miniaturized Chemical and Biochemical Analysis Systems (in press).
- Savage, N.O., Roberson, S.V., Gillen, J.G., Tarlov, M.J., and Semancik, S., "***Thermolithographic Patterning of Sol-Gel Oxides on Microhotplate Sensing Arrays using Organosilanes***," Analytical Chemistry (in press).
- Scace, G.E., and Hodges, J.T., "***Calibrating Water Permeation Tubes using Saturator-Based Primary Trace Humidity Standards***," Proc. SEMICON West 2003, ISBN 1-892568-78-0 (2003).
- Schmidt, J.W., and Moldover, M.R., "***Dielectric Polarizabilities of Eight Gases Measured with Cross Capacitors***," Intl. J. of Thermophysics 24, p. 375-403 (2003).
- Semancik, S., "***Temperature-Dependent Materials Research with Micromachined Array Platforms***," Combinatorial Materials Synthesis (in press).
- Semancik, S., Cavicchi, R.E., Meier, D.C., Taylor, C.J., Savage, N.O. and Wheeler, M.C., "***Temperature-Controlled MEMS Chemical Microsensors***," Proc. 1st AIST International Workshop on Chemical Sensors, p. 31-44 (2003).
- Sobolewski, M.A., "***Monitoring Sheath Voltages and Ion Energies in High-Density Plasmas using Noninvasive Radio-Frequency Current and Voltage Measurements***," Proc. American Institute of Physics Intl. Conf. on Characterization and Metrology for ULSI Technology, p. 195-199 (2003).

- Sobolewski, M.A., ***“Monitoring Sheath Voltages and Ion Energies in High-Density Plasmas using Noninvasive Radio-Frequency Current and Voltage Measurements,”*** J. of Applied Physics (in press).
- Steffens, K.L., and Sobolewski, M.A., ***“The Effect of Changing the Electrode Gap on the Spatial and Electrical Properties of O₂/CF₄ Plasmas,”*** J. of Vacuum Science and Technology A 21, (1) (2003).
- Strouse, G.F., and Hill, K.D., ***“Performance Assessment of Resistance Ratio Bridges used for the Calibration of SPRTs,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Strouse, G.F., ***“Internal Measurement Assurance for the NIST Realization of the ITS-90 from 83.8 K to 1234.93 K,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Strouse, G.F., ***“NIST Methods of Estimating the Impurity Uncertainty Component for ITS-90 Fixed-Point Cells from the Ar to the Ag FP,”*** Report for the Consultative Committee for Thermometry (2003).
- Strouse, G.F., Defibaugh, D.R., Moldover, M.R., and Ripple, D.C., ***“Progress in Primary Acoustic Thermometry at NIST: 273 K to 505 K,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Tarlov, M.J., and Steel, A.B., ***“DNA-Based Sensors,”*** Biomolecular Films: Design, Function, and Applications 12, p. 545-608 (2003).
- Taylor, C.J., Cavicchi, R.E., and Montgomery, C.B., ***“Microarray Approach for Optimizing Localized Deposition of Carbon Nanotubes using Microhotplate Arrays,”*** Nanotechnology (in press).
- Tew, W.L., and Meyer, C.W., ***“Recent Results of NIST Realizations of the ITS-90 Below 84 K,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Thomas, O., Cavicchi, R.E., and Tarlov, M.J., ***“The Effect of Surface Wettability on Fast Transient Microboiling Behavior,”*** Langmuir 19 (IS), p. 6168-6177 (2003).
- Vaughn, C.D., and Strouse, G.F., ***“NIST Calibration Uncertainties of Liquid-in-Glass Thermometers over the Range from -20°C to 400°C,”*** Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- White, D.R., Dransfield, T.D., Strouse, G.F., Tew, W.L., Rusby, R.L., and Gray, J., ***“Effects of Heavy Hydrogen and Oxygen on the Triple-Point Temperature of Water,”*** Proc. Temperature: Its Measurement and Control in Science and Industry, Vol. 7, (in press).
- Wright, J.D., and Johnson, A., ***“Design and Uncertainty Analysis for a PVTt Gas Flow Standard,”*** J. of Res. of the National Institute of Standards and Technology 108, p. 21-47 (2003).

Wright, J.D., Moldover, M.R., Johnson, A., and Mizuno, A., "Volumetric Gas Flow Standard with Uncertainty of 0.02% to 0.05%," J. of Fluids Engineering (in press).

Wright, J.D., "What is the "Best" Transfer Standard for Gas Flow?" Proc. FLOMEKO 03, on CD (2003).

Zangmeister, C.D., and van Zee, R.D., "Electroless Deposition of Copper onto 4-Mercaptobenzoic Acid Self-Assembled on Gold," Langmuir 19, p. 8065-8068 (2003).

Zangmeister, R.A., and Tarlov, M.J., "UV Graft Polymerization of Polyacrylamide Hydrogel Plugs in Microfluidic Channels," Langmuir (in press).

Zangmeister, R.A., and Tarlov, M.J., "Selective DNA Sensing Elements Integrated into Microfluidic Channels," MicroTAS 2003 Technical Digest (in press).

Zangmeister, R.A., and Tarlov, M.J., "DNA Displacement Assay Integrated into Microfluidic Channels," Analytical Chemistry (in press).

2. Talks

Abbott, P.J., "The Effect of Ambient Temperature on the Sensitivity of Hot Cathode Ionization Gauges," 49th Intl. Symposium of the American Vacuum Society, Denver, CO, November 6, 2002.

Berg, R.F., "Viscoelasticity and Shear Thinning Near the Critical Point of Xenon," World Space Congress, Houston, TX, October 16, 2002.

Berg, R.F., "Preliminary Results from CVX-2," NASA Glenn Research Center, Cleveland, OH, March 24, 2003.

Berg, R.F., "Viscoelasticity and Shear Thinning Near the Critical Point of Xenon," 15th Symposium on Thermophysical Properties, Boulder, CO, June 26, 2003.

Cavicchi, R.E., "Microscale Microsecond Calorimetric Sensing," 12th Intl. Conf. on Solid State Sensors Actuators and Microsystems, Boston, MA, June 11, 2003.

Espina, P. I., "Round-Robin Testing Project to Review the Performance of North American Meter Calibration Facilities," GTI-MTAG Meeting, San Antonio, TX, October 29, 2003.

Espina, P.I., "The New NIST Water Flow Calibration Facility," FLOMEKO Conference, Groningen, The Netherlands, May 12, 2003.

Espina, P.I., "The Future of Flow Measurement Accreditation: Friend or Foe?" FLOMEKO Conference, Groningen, The Netherlands May 14, 2003. Invited.

- Garrity, K.M., "A Four-Zone Furnace for Realization of Silver and Gold Freezing Points," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 23, 2002.
- Gillis, K.A., "Thermoacoustic Boundary Layers Near the Critical Point," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Huang, P.H., "Current Topics on Humidity Measurement and Standards," Measurement Science Conference, Anaheim, CA, January 14, 2003. Invited.
- Hurly, J.J., "The Viscosity of Several Gases Measured Accurately with the Greenspan Viscometer," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Hurly, J.J., "Measurements and Modeling of the Speed of Sound and Viscosity in N₂ and N₀," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Kreider, K.G., "Calibration of Radiation Thermometers in Rapid Thermal Processing Tools Using Si Wafers with Thin Film Thermocouples," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 22, 2002.
- Kreider, K.G., "Lightpipe Proximity Effects on Si Wafer Temperature in Rapid Thermal Processing Tools," 11th IEEE International Conf. on Thermal Processing of Semiconductors-RTP 2003, Charleston, SC, September 25, 2003.
- Kreider, K.G., "Effects of Lightpipe Proximity on Si Wafer Temperature in Rapid Thermal Processing Tools," 2003 International Conf. on Characterization and Metrology for ULSI Technology, Austin, TX, March 24, 2003.
- Maslar, J.E., "In-Situ Spectroscopic Investigation of Gas Phase Chemistry During Silicon Chemical Vapor Deposition," 2003 American Physical Society Meeting, Austin, TX, March 5, 2003.
- Maslar, J.E., "In-Situ Optical Diagnostics of Silicon Chemical Vapor Deposition Gas-Phase Processes," 2003 Intl. Conf. on Characterization and Metrology for ULSI Technology, Austin, TX, March 20, 2003.
- Maslar, J.E., "Non-Contact Determination of Free Carrier Concentration in n-GaSb and n-GaInAsSb," 2003 Electronic Materials Conference, Salt Lake City, UT, June 5, 2003.
- Maslar, J.E., "Non-Contact Determination of Free Carrier Concentration in n-GaInAsSb," 15th American Conf. on Crystal Growth and Epitaxy, Keystone, CO, July 15, 2003.
- Mattingly, G.E., "NIST Seminar: Flow Measurement," Measurement Science Conference, Anaheim, CA, January 13, 2003.
- Mattingly, G.E., "The WGFF: Status Report on Plans and Progress," Measurement Science Conference, Anaheim, CA, January 16, 2003. Invited.

- Mattingly, G.E., "Flow Measurement: Bright Ideas, Wild Claims, and Stark Realities," Instrument Society of America, Richmond-Hopewell Meeting, Richmond, VA, April 15, 2003. Invited.
- Mattingly, G.E., "The CIPM Working Group for Fluid Flow (WGFF): Plans and Progress," American Gas Association Operations & Biennial Exhibit, Orlando, FL, April 29, 2003. Invited.
- Mattingly, G.E., "Twenty-Five Years of Flow Lab Comparisons using Tandem Meter Transfer Standards: Lessons Learned and Lessons Not Learned," FLOMEKO '03, Groningen, Holland, May 12, 2003.
- Mattingly, G.E., "Improving the Acceptability of Flow Measurements," International Measurement Confederation (IMEKO) Meeting, Dubrovnik, Croatia, June 26, 2003.
- Mattingly, G.E., "Current Status of the Key Comparisons Planned by the CIPM Working Group for Fluid Flow," NCSL Summer Meeting, Tampa, FL, August 19, 2003.
- Mattingly, G.E., "Gas Flow Meter Calibration Procedures: "Best" Practice vs. "Other" Practices," American Gas Association Transmission Measurement Committee, Philadelphia, PA, September 22, 2003. Invited.
- May, E.F., "Dew Point, Liquid Volume and Dielectric Constant Measurements in a Vapour Mixture of Methane + Propane Using a Microwave Apparatus," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Meier, D.C., "Polymer-Silsesquioxane Composites as a Route to High Surface Area Materials for Mems Sensor Applications," 2002 Meeting of the Materials Research Society, Boston, MA, December 4, 2002.
- Meyer, C.W., "The NIST Low Temperature ITS-90 Realization and Calibration Facilities," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 23, 2002.
- Moldover, M.R., "Acoustic Thermometry and the Determination of the Gas Constant," PTB, Berlin, Germany, January 8, 2003. Invited.
- Olson, D.A., "Pressure Calibration at NIST using the Transducer Assisted Crossfloat Method," 2003 NCSL Workshop and Symposium, Tampa, FL, August 18, 2003.
- Pipino, A.C.R., "Novel Chemical Detection Strategies for TCE and PCE," ACS National Meeting, New York, NY, September 10, 2003.
- Pitre, L., "Primary Acoustic Thermometry from 4 K to 300 K," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Presser, C., "PIV Measurements of Droplet Transport in a Homogeneous Turbulent Flow over a Cylinder," 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 8, 2003.

- Presser, C., "NIST Program for Formation and Characterization of Engineered Aerosol Particulates: Addressing Needs for Climate Change," 2003 AAAR PM Conference on Atmospheric Sciences, Pittsburgh, PA, April 2, 2003.
- Presser, C., "Phase Doppler Measurements of Liquid Agent Transport over a Heated Cylinder," 13th Halon Options Technical Working Conf. (HOTWC-2003), Albuquerque, NM, May 14, 2003.
- Presser, C., "PIV Measurements in a Droplet-Laden Homogeneous Turbulent Flow Over a Cylinder," 16th Annual Conf. on Liquid Atomization & Spray Systems (ILASS Americas '03), Monterey, CA, May 20, 2003.
- Ripple, D.C., "Techniques for Primary Acoustic Thermometry to 800 K," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 21, 2002.
- Schmidt, J.W., "A Primary Pressure Standard to 7 Mpa Based on Fundamental Properties of Helium," Osaka University, Osaka, Japan, May 13, 2003. Invited.
- Schmidt, J.W., "A Primary Pressure Standard to 7 Mpa Based on Fundamental Properties of Helium," National Metrology Institute of Japan, AIST, Tsukuba, Japan, May 15, 2003. Invited.
- Schmidt, J.W., "A Primary Pressure Standard to 7 Mpa Based on Fundamental Properties of Helium," The Korea Research Institute of Standards and Science (KRISS), Taejeon, Korea, May 21, 2003. Invited.
- Schmidt, J.W., "Progress Towards a Primary Pressure Standard Based on the Dielectric Permittivity of Helium," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Semancik, S., "The Use of Micromachined Arrays for Efficient Materials Processing/Processing Studies," NIST Combinatorial Methods Center Annual Meeting, Gaithersburg, MD, October 7, 2002.
- Semancik, S., "Incorporating Chemically Functional Materials on MEMS Structures," 49th Intl. Symposium of the American Vacuum Society, Denver, CO, November 7, 2002.
- Semancik, S., "Microarray Platforms for Advanced Thermochemical Research on Sensing Materials and Processes," NASA Contractor's Meeting on Advanced Measurement and Detection Technology, Pasadena, CA, January 7, 2003.
- Semancik, S., "Materials Studies on MEMS Microhotplate Arrays," 5th Intl. Conf. on Combinatorial Approaches for New Materials Discovery, San Jose, CA, February 20, 2003.
- Semancik, S., "Temperature-Controlled MEMS Chemical Microsensors," 1st Advanced Industrial Science and Technology Intl. Workshop on Chemical Sensors, Nagoya, Japan, March 13, 2003. Invited.

- Semancik, S., "Processing Ceramic Materials on MEMS Platforms: Fabrication Challenges in Chemical Microsensor Development," 105th Annual Meeting of the American Ceramics Society, Nashville, TN, April 28, 2003.
- Semancik, S., "Detecting Chemical Agents with Solid State Microsensors," Nanotechnology and Its Role in Homeland Security, Manhattan, KS, June 2, 2003. Invited.
- Shinder, I., "Low-Frequency Acoustic Measurements in Xenon Near the Critical Point," 15th Symposium on Thermophysical Properties, Boulder, CO, June 23, 2003.
- Sobolewski, M.A., "Monitoring Sheath Voltages and Ion Energies in High-Density Plasmas using RF Current and Voltage Measurements," 55th Annual Gaseous Electronics Conference, Minneapolis, MN, October 17, 2002.
- Sobolewski, M.A., "Monitoring Sheath Voltages and Ion Energies in High-Density Plasmas using Radio-Frequency Current and Voltage Measurements," American Vacuum Society 49th International Symposium, Denver, CO, November 5, 2002.
- Sobolewski, M.A., "Monitoring Sheath Voltages and Ion Energies in High-Density Plasmas using Noninvasive Radio-Frequency Current and Voltage Measurements," 2003 International Conference on Characterization and Metrology for ULSI Technology, Austin, TX, March 27, 2003.
- Steffens, K.L., "Temperature Mapping in CF₄ Plasmas Using Planar Laser-Induced Fluorescence," 55th Annual Gaseous Electronics Conference, Minneapolis, MN, October 16, 2002.
- Steffens, K.L., "Temperature Mapping in Fluorocarbon Plasmas using PLIF of CF," 49th Intl. Symposium of the American Vacuum Society, Denver, CO, November 5, 2002.
- Strouse, G.F., "Internal Measurement Assurance for the NIST Realization for the ITS-90 from 83.8 K to 1234.93 K," ASTM E-20 Meeting, Kansas City, MO, May 5, 2003. Invited.
- Strouse, G.F., "Progress in Primary Acoustic Thermometry at NIST: 273 K to 505 K," 8th International Temperature Symposium, Chicago, IL, October 21, 2003.
- Strouse, G.F., "Performance Assessment of Resistance Ratio Bridges used for the Calibration of SPRTs," 8th International Temperature Symposium, Chicago, IL, October 23, 2003.
- Strouse, G.F., "Internal Measurement Assurance for the NIST Realization for the ITS-90 from 83.8 K to 1234.93 K," 8th International Temperature Symposium, Chicago, IL, October 23, 2003.
- Tarlov, M.J., "Exploring the Effect of Surface Hydration on Microboiling Events with Self-Assembled Monolayers," ACS National Meeting, New Orleans, LA, March 27, 2003. Invited.
- Tew, W.L., "Recent Results of NIST Realizations of the ITS-90 Below 84 K," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 23, 2002.

Thomas, G., "Microfluidic Sensors for Protein Analysis," ACS National Meeting, New Orleans, LA, March 24, 2003.

Thomas, O.C., "Chemical Sensing Using Ultra-Fast Micro-Boiling," 49th International Symposium of the American Vacuum Society, Denver, CO, November 7, 2002.

Thomas, O.C., "Studying Surface Phenomena by the Pulsed Heating of Microfluidics," 2003 Physical Electronics Conference, Ithaca, NY, June 18, 2003.

Vaughn, C.D., "NIST Calibration Uncertainties of Liquid-in-Glass Thermometers over the Range from $-196\text{ }^{\circ}\text{C}$ to $400\text{ }^{\circ}\text{C}$," 8th Intl. Symposium on Temperature, Chicago, IL, Oct. 24, 2002.

van Zee, R.D., "Electronic Structure of Moletronic Systems," Intl. Union of Vacuum Science & Technology Workshop on Surface Dynamics, Telluride, CO, June 23, 2003.

van Zee, R.D., "Moletronics for Metrologists," DARPA Moletronic Workshop, Tysons Corner, VA, July 29, 2003. Invited.

Wright, J.D., "Low Pressure Gas Flow Key Comparison (CCM-FF-K6)," 4th Meeting of the CIPM/CCM/Working Group for Fluid Flow, Groningen, The Netherlands, May 11, 2003.

Wright, J.D., "Results of the CCG 480: Low Gas Flow Measurement Assurance Program," CCG 480 Workshop, Redstone Arsenal, Huntsville, AL, September 23, 2003.

Zangmeister, C.D., "Photoemission Studies of Molecular Electronic SAMS on Au," ACS National Meeting, New Orleans, LA, March 24, 2003.

3. Cooperative Research and Development Agreements (CRADAs) and Consortia

Research and Development in Advanced Semiconductor Manufacturing Technology,
K.G. Kreider
International SEMATECH, Inc. (Consortia)

Temperature Sensing for Semiconductor Thermal Processing $300\text{ }^{\circ}\text{C}$ to $650\text{ }^{\circ}\text{C}$
K.G. Kreider
Sensarray Corp. (CRADA)

4. Patent Awards and Applications

Locascio, L.E., Ross, D.J., Tarlov, M.J., and Barker, S.L.R., "Polyelectrolyte Derivatization of Microfluidic Devices," (NIST Docket No. 00-031, Patent Pending)

Johnson, T.J., Waddell, E.A., Ross, D.J., Locascio, L.E., "Surface Charge Modification Within Preformed Microchannels to Modulate Flow and Fabrication of Microarrays by Laser Ablation in Performed Polymer Microchannels," (NIST Docket No. 01-005 and 01-006, Patent Pending)

Johnson, T.J., Ross, D.J., and Locascio, L.E., "Microfluidic Flow Manipulation Device," (Non-Provisional Application Filed)

Pipino, A.C.R., "Sensitive and Selective Chemical Sensor with Nanostructured Surfaces," (NIST Docket No. 01-001, U.S. Provisional Patent Application Serial No. 09/942,576, Patent Number 6,515,749 Issued February 4, 2003)

Pipino, A.C.R., Hodges, J.T., "Sensitive and Selective Biosensor Employing Nanostructured Surfaces," (NIST Docket No. 01-002, Patent Pending)

Pipino, A.C.R., "Optical Probes for Chemical and Biochemical Detection in Liquids," (NIST Docket No. 03-006, Patent Pending)

Ross, D.J., Locascio, L.E., "Simplified Methods for Electrokinetic Focusing in Microfluidic Devices," (NIST Docket No. 01-029, Patent Pending)

Ross, D.J., Howell, P., and Vreeland, W., "Micellar Gradient Focusint," (NIST Docket No. 03-008, Patent Pending)

Tarlov, M.J., Ross, D.J., and Olsen, K.E., "Bio-Affinity Gel Plugs in Microfluidic Channels," (NIST Docket No. 02-004, Non-Provisional Application Filed)

Thomas, O., Cavicchi, R.E., and Tarlov, M.J., "Fast Transient Microscale Heating for Chemical and Biochemical Detection," NIST Docket No. 02-006PA, Provisional Application Filed)

Zangmeister, C.D., van Zee, R.D., "Selective Electroless Attachment of Contacts to Electrochemically-Active Molecules," (NIST Docket No. 02-008, Provisional Application Filed).

5. SRM Activities

None.

6. SRD Activities

None.

7. Calibrations/Special Tests

Air Products & Chemicals Inc.	Duro-Sense Corp.	Kaman Aerospace Corporation
Airspeed Instruments	Ebtron, Inc.	Keithley Instruments, Inc.
Alcatel Vacuum Products, Inc.	EdgeTech	Kelly Completion Services, LLC
Alcoa Inc.	Energy Northwest	Kessler Thermometer Corp.
AMETEK, Inc.	Engelhard	Krum International Corp
Babcock & Wilcox	Engelhard-Clal	Kulas Systems, Inc.
Barnstead International	Ever Ready Thermometer Co. Inc	Kurz Instrument, Inc.
BBWI	Exelon Powerlabs	LDS Vacuum Products, Inc.
Bechtel	Fisher Scientific	LMTO Denver Metrology Services
Bionetics/AFPSL	Flowcal Scientific	Lockheed Martin Aeronautics Company
Boeing Commercial Airplane Group	Furnace Parts, LLC	Lockheed Martin Corp.
Boeing Company	Furukawa Sangyo Kaisha, Ltd.	Lockheed Martin Technical Operations
Boeing North American, Inc.	G & G Metering Services Ltd.	LSI Spa
Boonton Electronics Corporation	GE Industrial Systems	Mahr Federal
Brooklyn Thermometer Company, Inc.	GE Kaye Instruments, Inc.	Maine Department Agriculture
Burns Engineering, Inc.	GE-General Eastern	Marlin Manufacturing Corp.
BWXT Y-12, LLC	Geocorp Industrial Controls	MD Department of Agriculture
C-TEMP	Granville-Phillips Helix Technology	MD Instruments, Inc.
Calvert Cliffs Nuclear	Hart Scientific, Inc.	Medi-Flex Hospital Products, Inc.
Certified Measurement Services, Inc.	Haynes International, Inc.	Met One
Chino Works of America, Inc.	Helium Leak Testing, Inc.	Meter Engineers, Inc.
CI Systems Ltd.	Helix Technology Corp.	Middle River Aircraft Systems
City of Amarillo, Texas	Henry Troemner, LLC	Miller & Weber, Inc.
City of Tacoma	Hoffer Flow Controls, Inc.	Miller Wire & Cable
Environmental Services	Honeywell	Ministry of University Affairs
Climatronics Corporation	Honeywell FM&T	Mississippi Space Services
Airspeed Instruments	ICL Calibration Laboratories, Inc.	MJ Research, Inc.
Conax Buffalo Technologies, LLC	Industronics Service Company	MKS Instruments, Inc.
Concept Alloys LLC	Inspectorate	MVM Enterprises
Conrad Kacsik Instrument Systems, Inc.	Instituto Nacional De Normalizacion	Mykrolis Corporation
Consolidated Ceramic Products, Inc.	Instrulab, Inc.	NASA/Kennedy Space Center
Control Solutions Ltd., LLC	Intech Automation Systems Corporation	National Basic Sensor
Daniel Measurement & Control, Inc.	Intersil Corp	National Electric Wire Company
Department of Agriculture	Invensys Metering Systems	National Standards of Puerto Rico
Detroit Edison	Isabellenhutte Heusler GMBH	
DHHS/FDA/CDRH/OSM	Isotech	
Duke Engineering & Services	Jim Beam Brands Company	
	Johnson Matthey	
	Kahn Companies	

Northrop Grumman Space Technology	Ruska Instrument Corporation, Inc.	Tobacco Industry Testing Lab
Omega Engineering, Inc.	Sandia National Laboratories	TRANSCAT
OSHA	Santa Barbara Infrared, Inc.	TRW Space & Electronics
Parker Hannifin Corporation	Sensing Devices, Inc.	US Army
Pemberton Fabricators, Inc.	Shinyei Corp of America	US Department of Commerce
Plantation Pipeline Company	Shortridge Instruments, Inc.	US Department of Energy
Pond Engineering, Inc.	Siemens VDO Automotive	US Department of Labor
Power Generation Tech	Smith Systems Operation	US Navy
PPL Susquehanna	South Carolina Electric & Gas Co.	Vacuum Technology, Inc.
Pratt & Whitney (The Bernd Group, Inc.)	Special Metals Corporation	Vaisala, Inc.
Pressurements Limited	Stillings Instrument Systems Company	Varian Vacuum Technologies
Primary Standards North America, Inc.	Sypris Test & Measurement	Wah Chang
Pyco, Inc.	Teledyne Hastings	Westinghouse Savannah River Co.
Pyromation, Inc.	Tennessee Valley Authority	Williams Pipe Line Company
Pyrometric Service Company	Thermo Electric Wire & Cable, LLC	Wyeth-Ayerst Pharmaceuticals
Radiance Industrial Co., Ltd.	Thunder Scientific Corp.	Wyle Laboratories
Raytheon Company		YSI Incorporated
Red Ant Mfg., Ltd.		

8. Committee Assignments

P.J. Abbott

AVS Recommended Practices Standards Committee
 AVS Recommended Practices Subcommittee on Ionization Gauge Calibration
 CIPM C002 Consultative Committee on Mass and Related Quantities
 SC.04 Low Pressure
 NIST Research Library Advisory Board

M.J. Carrier

NIST Information Technology Services Planning Team

R.G. Driver

CSTL Diversity Committee
 NCSL Intrinsic and Derived Standards Committee, Deadweight Pressure Gauges

P.I. Espina

CIPM Consultative Committee on Mass and Related Quantities
 WG Fluid Flow (WGFF)
 Gas Technology Institute MTAG
 SIM TWG10 Flow and Related Quantities, Chair
 NORAMET TC: Mechanical Area
 API Committee on Petroleum Measurements

K.M. Garrity

ASTM E020 Temperature Measurement
SC.04 Thermocouples

K.A. Gillis

NIST Information Technology Services Planning Team
NIST Scientific Computing Working Group

P.H. Huang

ASTM D022 Sampling and Analysis of Atmospheres
SC.09 ISO Tag for ISO/TC146 (Air Quality)
SC.11 Meteorology
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
WG6-Humidity Measurements, Chair
SEMI C012 Test Methods and Recommended Practices
SC.02 Gases/Semiconductor
WG.02 Moisture Measurements in Gases

J.J. Hurly

SEMI C012 Gases
SEMI C014 Facilities

W.S. Hurst

ASTM E013 Molecular Spectroscopy
SC.08 Raman Spectroscopy

K.G. Kreider

ASTM E020 Temperature Measurement
SC.02 Radiation Thermometry
SC.04 Thermocouples

A. Lee

CIPM C002 Consultative Committee on Mass and Related Quantities
WG2-High Pressure
WG4-Low Pressure
WG6-Medium Pressure
NIST Diversity Advisory Board, Chair
CSTL Diversity Committee, Chair

J.P. Looney

AVS Vacuum Technology Division Executive Committee
AVS Recommended Practices Committee on Spinning Rotor Gages
CIPM C002 Consultative Committee on Mass and Related Quantities
SC.04 Low Pressure

G.E. Mattingly

ASME C008 Measurement of Fluid Flow in Closed Conduits
SC.06 Glossary of Terms for Flow Measurements
SC.14 Flow Measurement by Weighing and Volumetric Techniques, Chair

SC.15 Installation Effects
SC.16 Vortex Shedding Flow Meters
SC.19 Flow Conditioning
SC.22 Critical Flow Meters
SC.23 Small Bore Orifice Meters
CIPM Consultative Committee on Mass and Related Quantities
 WG9-Fluid Flow, Chair
IMEKO TC-09 Flow Measurement
US TAG for ISO/TC30 Measurement of Fluids Committee

C.W. Meyer

ASTM E020 Temperature Measurement
CIPM International Committee on Weights and Measures
 CCT Consultative Committee on Thermometry
 WG3-Uncertainties

A.P. Müller

ASTM E037 Thermal Measurements
 SC.01 Test Methods and Recommended Practices
AVS Recommended Practices Subcommittee on Thermal Conductivity Gauging
AVS C0009 Low Pressure Gauges
CIPM Consultative Committee on Mass and Related Quantities
 WG2-High Pressure
 WG4-Low Pressure, Chairman
 WG6-Medium Pressure

M.R. Moldover

NASA Review Panel, Fluid Dynamics Discipline Working Group
NASA Review Panel, Fundamental Processes Discipline Working Group
CIPM International Committee on Weights and Measures
 CCT Consultative Committee on Thermometry
 WG4-Thermodynamic Temperature Determination and Extension of ITS-90 to
 Lower Temperatures

D. Olson

CIPM C002 Consultative Committee on Mass and Related Quantities
 SC.02 High Pressure
NCSLI Intrinsic and Derived Standards Committee, Deadweight Pressure Gauges

C. Presser

AAAR Combustion and Fundamental Aerosol Chemistry Working Group
AIAA Terrestrial Energy Systems Technical Committee
AIAA Computational Fluid Dynamics Committee on Standards
ASME HTD Committee on Heat Transfer in Energy Systems
ASME FACT Committee for Academic and Industrial Research
ASME CIE Energy Systems Technical Committee
ASTM E029 Particle Size Measurement
 SC.03 International Cooperation on Terminology, Standards, and Methods
 SC.04 Liquid Particle Measurement
 SC.05 Reference Materials

Carbon Cycle Interagency Working Group
Combustion Institute Program Review Subcommittee
ILASS Diesel and Automatic Spray Technical Committee
ILASS Computation and Modeling Technical Committee
JANAF Interagency Propulsion Committee, Modeling and Simulation Subcommittee

D.C. Ripple

ASME C019 Performance Test Codes
SC.03 Temperature Measurement, Chair
ASTM E020 Temperature Measurement
SC.04 Thermocouples, Secretary
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
WG1-Defining Fixed Points and Interpolating Instruments, Chair

J.W. Schmidt

NCSLI 144 Intrinsic and Derived Standards
SC.01 Consensus Standards Committee on Dead-Weight Pressure Gauges

S. Semancik

Program Committee, 9th International Meeting on Chemical Sensors

K.L. Steffens

AVS Plasma Science and Technology Executive Committee

G.F. Strouse

ASTM E020 Temperature Measurement
SC.03 Resistance Thermometers
SC.06 New Thermometers and Techniques
SC.07 Fundamentals in Thermometry
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
WG7-Key Comparisons
SIM InterAmerican System of Metrology
TC Technical Committee
MWG3 Temperature, Chair

M.J. Tarlov

AVS Biochemical Interfaces Steering Committee
CSTL Colloquium Committee

W.L. Tew

ASTM E020 Temperature Measurement
SC.03 Resistance Thermometers
SC.06 New Thermometers and Techniques
SC.07 Fundamentals in Thermometry
IEC TC065 Industrial Process Measurement and Control
SC65B Elements of Systems
WG05 Temperature Sensors

R.D. van Zee

Plyler Prize Development Committee (APS)
DARPA Source Evaluation Board (BAA03-13)

C.D. Vaughn

ASTM E020 Temperature Measurement
SC.05 Liquid-in-Glass Thermometers and Hydrometers, Secretary

J.R. Whetstone

ISA C002 Standards and Practices Board

T.T. Yeh

ASME MFC Subcommittee 9, Ultrasonic Flowmeters

9. Editorships

G.E. Mattingly

Editorial Advisory Board, Flow Measurement and Instrumentation, Elsevier Science, Ltd., Oxford, UK

D.C. Ripple (editor-in-chief), C.W. Meyer, G.F. Strouse, W.L. Tew., Temperature: Its Measurement and Control in Science and Industry, Vol. 7, Proc. 8th Intl. Temperature Symposium, AIP (in press).

S. Semancik

Editorial Board, Sensors and Actuators B
Editorial Board, Sensor Letters

R.D. van Zee and J.P. Looney

Cavity-Enhanced Spectroscopies, Vol. 40, Experimental Methods in the Physical Sciences, Academic Press, Boston, MA (2002).

10. Seminars

October 11, 2002

Stanislaus S. Wong, State University of New York, Stony Brook, NY
“Chemical Functionalization Strategies for Carbon Nanotubes” (Division Sponsor: M. Tarlov)

October 15, 2002

Johan Hoefnagels, Eindhoven University of Technology, The Netherlands
“Surface Science Aspects of Plasma Deposition” (Division Sponsor: M. Tarlov)

January 21, 2003

Dr. Robert Schoelkopf, Yale University, New Haven, CT
“The Ideal Electron-Gas Thermometer” (Division Sponsor: W. Tew)

February 11, 2003

David W. Grainger, Colorado State University, Ft. Collins, CO

“Surface Chemistry and Analysis for Interfaces Appropriate for Biotechnology” (Division Sponsor: M. Tarlov)

February 12, 2003

Peter J. Hesketh, Georgia Institute of Technology, Atlanta, GA

“Microfabricated Components for Miniature Chemical Analysis Systems on a Chip” (Division Sponsor: M. Tarlov)

February 19, 2003

Ivan C. Getting, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder, CO

“High Pressure – Temperature Metrology: Current State of the Art and Future Goals” (Division Sponsor: W. Tew)

April 7, 2003

Carrie Donley, University of Arizona, Dept. of Chemistry, Tucson, AZ

“Surface and Interface Modification in Organic Electronic Devices” (Division Sponsor: M. Tarlov)

April 14, 2003

Aric Opdahl, University of California-Berkley, Dept. of Chemistry, Berkley, CA

“Characterizing the Surface Morphology and Mechanical Behavior of Polymer Interfaces by SFG Surface Vibrational Spectroscopy, XPS, and AFM” (Division Sponsor: M. Tarlov)

June 5, 2003

Neal Armstrong, University of Arizona, Tucson, AZ

“Critical Interfaces in OLEDs and PV Technologies” (Division Sponsor: R. Zangmeister)

June 17, 2003

Carlos Martinez, University of Illinois, Dept. of Materials Science & Engineering, Urbana, IL

“Nanoparticle-Mediated Assembly of Colloidal Crystals on Patterned Substrates,” (Division Sponsor: S. Semancik)

June 19, 2003

Andres F. Estrada-Alexanders, Dept. of Physics, Universidad Autonoma Metropolitana, Mexico

“Prediction of Thermodynamic Properties from Speed of Sound” (Division Sponsor: M. Moldover)

June 20, 2003

Kurt Benkstein, National Renewable Energy Laboratory, Golden, CO

“Influence of Network Geometry on Electron-Transport Dynamics in Mesoporous Nanoparticle Solar Cells,” (Division Sponsor: S. Semancik)

June 25, 2003

Michael A. Scott, NASA Langley Research Center, Hampton, VA

“Shear Stress Measurements: The Need for a National Standard,” (Division Sponsor: P. Espina)

August 22, 2003

Nicholas Szabo, Dept. of Chemistry, Ohio State University

“Development of Novel Solid-State Combustion Gas Sensors,” (Division Sponsor: S. Semancik)

September 24, 2003

Mohammad Islam, Columbia University

“Electrophoretic Deposition of Nanocrystal Films,” (Division Sponsor: R. van Zee)

11. Conferences/Workshops/Sponsored or Co-Sponsored Sessions

October 21-24, 2002

8th Intl. Symposium on Temperature, Chicago, IL, - D.C. Ripple (program chair), C.W. Meyer, (program committee), G.F. Strouse (program committee), W.L. Tew, (deputy general chair), C.D. Vaughn, (conference secretary)

December 9-10, 2002

Using a Liquid-in-Glass Thermometer in Industrial Environments, ASTM Committee D2 (Petroleum), Anaheim, CA (C.D. Vaughn)

January 14-16, 2003

Buildings for Advanced Technology Workshop, Gaithersburg, MD (J.R. Whetstone)

March 24-28, 2003

Precision Thermometry Workshop, Gaithersburg, MD (D.C. Ripple)